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Induction of Squamous Cell Lung Carcinoma in the Mouse.

The objective of this contract is to determine whether squamous-cell lung carcinoma analogous to the human disease can be induced in the laboratory mouse by methods similar to those reported by Saffiotti to have been successful with the hamster, namely, the intratracheal instillation of measured doses of known carcinogenic agents along with ferric oxide.

Mice have the advantage of availability in many inbred strains with contrasting degrees of cancer susceptibility as shown by empirical studies and defined in some part by observed differences in aryl hydrocarbon hydroxylase inducibility and in endogenous C type viral genome and oncogene expression. Their disadvantage is the small lung dimensions which impose technical mechanical problems.

Successful adaptation of the intratracheal instillation techniques is now being followed by systematic studies of tolerance levels for benzo-[a]-pyrene and methylcholanthrene, clearance rates of these hydrocarbons and of iron oxide, pathological changes in the lung as related to time of contact and dosage level of these substances, yield and nature of lung neoplasms observed, and the influence of various vehicles for the hydrocarbon administration.

The study has been extended to instillation of other particulate materials, especially chrysotite asbestos, with observation of distribution within the lung, rates of clearance and pathological effects with time.

These investigations are intended to prepare the way for long-term chronic studies of cigarette smoke inhalation in defined mouse systems.

Activation Date: June 1, 1974 - March 31, 1975

Current Contract Level: $75,000.